To: Shannon Lotthammer[shannon.lotthammer@state.mn.us]
From: Holst, Linda
Sent: Wed 3/12/2014 6:15:37 PM
Subject: Re: Preliminary Analysis of the Wild Rice Sulfate Standard Study

Thanks
Sent by EPA Wireless E-mail Services

From: Lotthammer, Shannon (MPCA) <shannon.lotthammer@state.mn.us>
Sent: Wednesday, March 12, 2014 1:05:20 PM
To: Holst, Linda
Subject: FW: Preliminary Analysis of the Wild Rice Sulfate Standard Study

Hi Linda –

Below is the message our Commissioner sent to the Wild Rice Standards Study Advisory Committee with the attached preliminary analysis. Please feel free to forward this to Region 5 EPA folks who may be interested. Please also feel free to call me if you have any questions.

Many thanks!

Shannon

From: Commissioner MPCA
Sent: Wednesday, March 12, 2014 12:43 PM
To:
Subject: Preliminary Analysis of the Wild Rice Sulfate Standard Study

In 1973 the Minnesota Pollution Control Agency adopted, and the United States Environmental Protection Agency approved, a sulfate level standard for water used for the production of wild rice. The 1973 water standard was based on observations and water chemistry correlations made by Dr. John Moyle in the late 1930's and early 1940's, concluding that *"no large stand of rice occur in water having sulfate content greater than 10 parts per million (mg/L), and rice is generally absent from waters with more than 50 ppm."*

While these findings were based on sound scientific observation, Dr. Moyle's study did not address the specific mechanism by which sulfate appears to impact wild rice growth. In 2011, the Minnesota legislature directed the Minnesota Pollution Control Agency to study the effects of sulfate and other substances on the growth of wild rice, and to evaluate the existing 1973 standard.

Research for the Wild Rice Sulfate Standard Study was completed in December, 2013. Based on that information, the Agency presents the attached preliminary analysis and next steps including:

•□□□□□□□□ Although sulfate is not directly toxic to wild rice, it can be converted to sulfide which is toxic.

•□□□□□□□□ Sulfide does not "contaminate" the rice itself for consumption, rather, it limits the plants'

ability to grow.

•□□□□□□□□ Sulfide in sediment porewater is affected by the amount of sulfate in the water column and the amount of iron in the sediment. The presence of iron has a strong role in controlling the level of sulfide in the sediment porewater. If the iron supply is greater than the production of sulfide, then iron can precipitate sulfide as it is produced yielding lower sulfide levels.

•□□□□□□□□ Site specific standards may be needed given the complex biology and chemical interactions of different waterways.

•□□□□□□□□ Further scientific inquiry and analysis is needed to explore adopting a sediment porewater sulfide standard to protect wild rice.

It is important to note that this analysis only begins to explain the complexity of this subject and does not represent a final answer on water quality standards that will protect Minnesota's wild rice. We have learned much over the past three years. There are many questions and considerations yet to be discussed about protecting the health of our state's wild rice. These questions cannot be answered definitively today.

We look forward to the scientific peer review of this analysis and a thoughtful public dialogue.

Sincerely,

John Linc Stine

Commissioner

MN Pollution Control Agency

Minnesota Pollution Control Agency

MPCA's Mission: protect and improve the environment and enhance human health. Join us!